



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Yonezawa, et al.

Art Unit : 1763

Serial No. : 09/820,520

Examiner : Luz L. Alejandro

Filed : March 28, 2001

Title : PLASMA CVD DEVICE AND DISCHARGE ELECTRODE

MAIL STOP AF

Commissioner for Patents

P.O. Box 1450

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RESPONSE TO ACTION OF FEBRUARY 25, 2004

Claims 1-4, 6-14, 20 and 21 are pending, with claims 1 and 10 being independent.

Claims 15-19 are currently withdrawn from consideration and claim 5 has been cancelled.

Claims 1-4 and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (in particular, FIGS. 2 and 3 of the present application) in view of U.S. Patent No. 5,614,026 to Williams ("Williams") and further in view of U.S. Patent No. 4,410,558 to Izu et al. ("Izu"). Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Williams and Izu, and further in view of U.S. Patent 6,156,151 to Komino et al. (Komino) or U.S. Patent No. 4,808,553 to Yamazaki (Yamazaki).

Regarding the rejection of claims 1-4 and 6-14 under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Williams and further in view of Izu, Applicant respectfully submits that the proposed combination of the system of FIG. 3 of the present application with Izu, Williams, and FIG. 2 of the present application does not validly support a prima facie case of obviousness under 35 U.S.C. 103(a).

Independent claim 1 recites (emphasis added):

1. A plasma CVD apparatus comprising:
 - a vacuum chamber;
 - an exhaust means for exhausting the gas from the vacuum chamber to an outside;
 - an electrode for supplying an electric energy inside the vacuum chamber;
 - a supporting means for supporting a substrate opposing the electrode **wherein said substrate is moved in a first direction through said chamber;**

an introducing port for gas, located between the electrode and the substrate **wherein said gas is introduced into said chamber in a direction parallel with said first direction;**
wherein a plurality of openings are located on a surface of the electrode opposing the substrate,
wherein the gas is exhausted from the plurality of openings to the outside of the vacuum chamber.

With respect to the claim language emphasized above, the Office Action admits that neither Williams nor Izu discloses or properly suggests that the claimed substrate moves in a first direction through a chamber, and that process gas is introduced in a direction parallel to the first direction. In particular, Izu discloses (see FIG. 3) a chamber in which process gas is introduced through manifolds 52, 54 in a direction perpendicular to a direction of movement of a substrate 10.

Instead, the Office Action relies on FIG. 3 of the present application as admitted prior art, which illustrates a process gas that is introduced between electrodes 302, 303 in a direction parallel to a substrate 301. The Office Action takes the position that the process gas of FIG. 3 is introduced in a direction parallel to a direction of movement of the substrate 301 between the electrodes 302, 303.

The Office Action then states that it would have been obvious to modify Izu (and Williams and admitted prior art of FIG. 2) to introduce a process gas in a direction parallel to a direction of substrate movement, "... because this is shown to be conventional ... (and) ... a matter of design choice to determine the optimum direction of gas flow and would not lend patentability to the instant application absent the showing of unexpected results" (see page 4 of the Office Action).

In response, Applicant submits that the subject matter in the "Description of the Related Art" at pages 1-5 of the application do not necessarily constitute admitted prior art. That is, even if certain of the systems described therein may be included in various other patents and/or publications, Applicant does not concede that the comments in the present application that describe these systems (and their various shortcomings) constitute admitted prior art. Rather,

such comments may represent, for example, observations of the inventors with respect to the prior art systems.

Moreover, as stated above, Applicant respectfully submits that the proposed combination of the system of FIG. 3 of the present application with Izu, Williams, and FIG. 2 of the present application does not validly support a prima facie case of obviousness under 35 U.S.C. 103(a), for at least the reasons set forth below.

First, Applicant respectfully submits that proper motivation to combine these references in the proposed manner has not been established. For example, the position of the Office Action that the proposed modification would have been obvious because the system of FIG. 3 of the present application is "conventional" is insufficient, since the Manual of Patent Examining Procedure (MPEP) specifically states that an Examiner's "statement that modifications ... (would have been obvious) because ... all aspects of the claimed invention were individually known ... is not sufficient to establish a prima facie case of obviousness" (MPEP 2143.01, emphasis added).

Second, the Office Action also takes the position that it is "... a matter of design choice to determine the optimum direction of gas flow." However, Applicant respectfully submits that this line of reasoning is out of place, since none of the cited references teach that a direction of gas flow is a "result-effective variable," that is, "a variable which achieves a recognized result," as required by MPEP 2144.05(II)(B) in a rejection relying on design choice. Thus, even if the system of FIG. 3 of the present application happens to show introduction of process gas in a direction parallel to a direction of movement of a substrate, this does not disclose or properly suggest that a direction of gas flow is a "result-effective variable" in optimizing any particular "recognized result," nor does the Office Action explain how or why such optimization is thought to occur.

Indeed, and third, the system of FIG. 3 of the present application is described at page 5, lines 1-15 as being problematic, since that system is described as resulting in disadvantageous adhesion of fine or fragmental particles to the substrate 301. Therefore, Applicant submits that the Office Action improperly fails to consider portions of the cited references that "teach away"

from the proposed combination (see MPEP 2143.01). As a result, even if the direction of gas flow is considered to be "a matter of design choice," none of the cited references properly suggest that this "design choice" would have been selected, i.e., that the proposed combination of the systems of FIGS. 2 and 3 of the present application with Williams and Izu would solve the problem of preventing adhesion of the fine or fragmental particles discussed above.

Fourth and finally, Applicant notes that such an advantage of the claimed configuration constitutes an "unexpected result," and therefore further points to the non-obviousness of the claimed combination of features.

Similarly to claim 1, independent claim 10 recites (emphasis added):

10. An apparatus comprising:
a chamber;
a first electrode in the chamber;
a second electrode in the chamber;
a substrate holder to hold a substrate between the first and second electrode **wherein said substrate is moved in a first direction through said chamber;**
at least one gas inlet port to introduce a gas to a space between the substrate and the second electrode **wherein said gas is introduced in a direction parallel to said first direction;** and
a plurality of gas exhaust ports provided in said second electrode through which said gas is exhausted from said space.

Accordingly, as with claim 1, the prior art of record does not disclose or properly suggest the recited movement of the substrate relative to an introduction direction of the gas through the inlet port(s), as set forth in claim 10.

As independent claims 1 and 10 are allowable for at least the reasons set forth above, dependent claims 2-4, 6-9, 11-14, 20, and 21 are believed to be allowable for at least the same reasons. Based on the above, all of the pending claims 1-4, 6-14, 20, and 21 are believed to be in condition for allowance, and such action is hereby requested in the Examiner's next official communication.

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Respectfully submitted,

Date: _____

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